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PLANNING AND IMPLEMENTING A MONTANA WATER USE DATA BASE: A COOPERATIVE PROGRAM WITH THE NATIONAL WATER USE DATA SYSTEM OF THE UNITED STATES GEOLOGICAL SURVEY

PROPOSAL

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United States Geological Survey
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from

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
Water Resources Division
Water Sciences Bureau
32 South Ewing
Helena, Montana 59601

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I. THE NEED AND PURPOSE

The demand for using more ground and surface water is increasing in Montana. Agriculture, industry, Indian and non-Indian federal agencies, municipalities and others within and outside Montana are interested in Montana's water. Although there appears to be enough water available for existing use, this resources may become depleted or over-appropriated in some areas of Montana in the future.

The need is for the state to develop a comprehensive water data base system for allocating and efficiently managing the state's water resources. At the present time, much of the water data for the state is incomplete, outdated, and that which is available is difficult to retrieve because much of it is located in separate agency files. There is no single source from which water data can be obtained. Therefore, the purpose of this project is to design and implement a Montana water data base system which is compatible with the needs of Montana. The system must serve various state agencies within Montana and be able to supply the data required by the National Water Use Data System (NWUDS) of the U.S. Geological Survey.

II. OBJECTIVES

The two primary objectives are:

(1) to design and develop a state-wide water resource data management system which is compatible with (a) the needs of the various state agencies involved in water management; and (b) the NWUDS program of the U.S. Geological Survey; and

(2) to implement the system which includes collecting, compiling and computerizing water data in a format that can be efficiently used by the various state agencies.

III. PROJECT DESIGN

A. Participants

The Department of Natural Resources and Conservation (DNRC) will act as the lead agency for the Montana Water Data Base (MWDB) system. Funding from the U.S. Geological Survey, as part of the NWUDS program will be channeled through DNRC. The design, development and implementation of the system will be coordinated with the Department of Health and Environmental Sciences (DHES), Bureau of Mines and Geology (BMG), Department of Fish, Wildlife and Parks (DFWP), and the Water Resource Research Center (WRRC) and other interested agencies.

A steering committee is being formed to design, implement, and direct the project. The committee consists of one or more technical competent staff members from each of the agencies cited above. Because the DNRC is responsible for the project, the committee will be chaired by a competent staff member within the DNRC. To insure close cooperation with the USGS, a member of their staff has been asked to act as a liaison between the USGS and the steering committee. Members of the steering committee include:

(Chairman) Gerhard Knudsen, Program Manager,
Water Sciences Bureau, DNRC

Arnold Vinnard, Chief
Water Planning Bureau, DNRC

George Cawlfield, Data Processing Manager
Centralized Services Division, DNRC

Steve Pilcher, Chief
Water Quality Bureau, DHES

Larry Peterman, Water Resources Supervisor,
DFWP

Dr. William Hunt, Interim Director
Water Resources Research Center, MSU

Dr. Marvin Miller, Chief Hydrogeologist
Bureau of Mines and Geology

Laurence Siroky, Chief
Water Rights Bureau, DNRC

Rick Bondy, Chief
Engineering Bureau, DNRC

Chuck Parrett, Hydrologist
USGS (Federal Coordinator)

Information and cooperation will be sought from the Department of State Lands and Agriculture and other federal and state agencies as well as from industry and municipalities. If the system proves beneficial on a few test cases after the first year, other personnel will be needed to implement and operate the state-wide system.

A program manager within the DNRC will be hired or contracted with and will assist the steering committee in the design, development, and implementation of the system. This person should have a reasonable knowledge of data management, hydrology, and computer systems.

Six adjudication specialists will be responsible for collecting water use data as well as assisting water users in completing their water right applications for claiming water in Montana. ?

Two computer specialists will be hired by the program manager in consultation with George Cawlfield, Data Processing Manager, DNRC to carry out three primary functions:

1) Make sure that the water use data are correctly added to the Montana Water Data Base System and that proper procedures and software are developed to satisfy the users of the data.
2) Satisfy DNRC's obligations to the NWUDS program by supplying them periodically with the required information.
3) Intergrate the other computerized water data based with the Montana Water Data Base.

These persons are responsible for making data available to users in a short time, at a reasonable cost and in an understandable format. More-

over, these persons must have an indepth comprehension of the data in the Montana water data base system, have an expert knowledge of data retrieval methods and be able to translate users requests into data base queries.

Two keypunchers will be responsible for coding all water use information into a usable format.

The Records Supervisor and his assistant will make sure that all water right data pertaining to water use and needed by the NWUD system are incorporated into the Montana data base.

Because George Cawlfield is the Data Processing Manager for DNRC and because the MWDB system is centered within DNRC, George Cawlfield will supervise the computer specialists and keypunchers on any work having to do with the computer facilities.

B. Management Plan

A two phase approach will be used to design, develop and implement the Montana Water Data Basin System. The major tasks and sequencing of responsibilities to implement the MWDB system are identified herein. The first phase is for one year to initially design the system and to test the system on a few cases. Upon completion of the first year, the system will be reviewed to determine whether this system could satisfy the needs of a wide spectrum of water managers within the state. If the steering committee and users of the data are satisfied, a state-wide system will be implemented during Phase II.

During Phase I four tasks to be accomplished are:

1) Establishment of multi-agency cooperation,
2) Determination of the types of data needed by the various state agencies involved with the MWDB system and by those data required by NWUDS,
3) Collection of water rights data under SB 76 into a computerized retrievable format, and
4) Initially design the system and carry through development and implementation on a few test cases.

Each objective is discussed in more detail below.

The first objective is to organize the steering committee and hire or contract for a program manag~~er so~~ that (money ?) they can begin establishing the cooperation needed for implementing the Montana Water Data System. They will review the existing data base systems in other states and acquire a working knowledge on how such a system should be designed. The steering committee will establish communication with and receive input from various state, federal and private agencies which would benefit from and assist in the development of a Montana Water Data Base System.

The second objective is for the steering committee to determine the desirable data products (data needs) and the processes for achieving the product. The program manager will be responsible for determining the specific type of data that are available from existing sources, accuracy of the data, and the compatibility of the data with NWUDS and types of data that will be needed in the MWDB system.

The third objective will be to begin coding data from the claims registration forms into the MWDB. The 1979 Montana Legislature passed SB 76 (Title 85, Chapter 2, Part 2 of the Montana Laws) requiring a mandatory registration of all water rights prior to 1973 before January 1, 1982. This process and data product is compatiable with the need of the NWUDS program. Because SB 76 has already been initiated, an early formatting of these data into the ~~Montana water~~ data base is necessary.

The fourth objective is to initially design, develop and implement the data base management system for a few data products. The steering committee in direct cooperation with the Program Manager will determine the data products and the necessary processes. After implementing and operating the system on a few case studies for one year, the steering committee will review the system to determine whether it is the most desirable system

for Montana. If the answer is 'yes', Phase II will begin. If the answer is 'no', the project will be either terminated or reassessed.

With the knowledge gained in Phase I, a comprehensive state-wide water data management system will be designed and implemented during Phase II. To properly carry out the second objective, the following list of tasks must be accomplished:

(1) complete the design of the state wide system

(2) determine and hire the necessary staff

(3) develop standards and procedures for the system

(4) acquire the use of the necessary hardware

(5) design software to put the data into a usable format

(6) develop and implement the data base and appropriate software

(7) document capabilities of the new system

(8) train professionals on how to use the system

(9) continue collecting data and evaluating the efficiency of the system.

Because the project is complex, the organizational structure, the development of tasks and assigning of responsibilities must be carefully delineated.

Each task is elaborated in more detail below.

Task 1

To properly design the Montana Water Data Management System, the steering committee and program manager must make sure that the system supports:

a) a state-wide water plan

b) The Montana water rights adjudication program

c) a water quality data management system

d) The National Water Use Data System

e) other?

The steering committee through a need assessment, will determine the types of information and data products that should be included in a state-wide water data management system. Input will be received from numerous agencies and state

and federal officials to finalize the functional requirements of a Montana Water Data Management system. The functional requirements include the data needs, the administrative procedures, interfacing requirements with other computerized data systems, and types of hardware and software need to handle the information.

Task 2

The program manager with input from the steering committee will hire or begin using the necessary personnel, discussed earlier, to begin implementing the system. These people will begin early in the second year so that they can also learn of the needs of the various agencies, location and availability of data and to carry out the remaining tasks described below.

Task 3

With the information derived from Task 1, the standards and procedures can now be implemented following the guidelines of the National Water Use Data System as discussed below.

a) Logistic requirements - the Montana system must include the capability to acquire, and assemble water data, store and maintain data files and provide updating and retrieval capabilities for data. The system must be easy for the user to understand and must provide many types of data outputs and graphics. The system must be able to supply cost-effective responses to unforeseen changes in management, operational requirements and new users.

b) Response requirements. In essence, "What does the system do for us?" The system must be able to handle five "kinds" of questions--basic, specific, cumulative, general and compound. Examples of each are listed below.

1) Basic: What is the volume of water in Cooney Dam?

2) Specific: What type(s) of crops are irrigated by the diversions from water right number ______________________?

3) Cumulative: What is the total volume of water spilled in Canyon Ferry Reservoir in 1979?

4) General: How much water is withdrawn from the Missouri River Basin above Canyon Ferry Reservoir?

5) Compound: How much water was diverted from the Tongue-Yellowstone Canal in July, 1978, and how much of the water was used for irrigating corn?

These five kinds of questions were modified from the Virginia Water Use Data System documents as applicable to the Montana situation. Refer to the Virginia and Kansas systems for other examples of response requirements.

c) Data Requirements. The data needed by the various users throughout the state will be coded in a conventional format, whenever possible. The data called data elements, will be grouped into functional groups and these functional groups will become the building blocks of the Montana water data management system. The data elements and formatting procedure of the Virginia and Kansas water data system will be thoroughly reviewed and modified to meet the needs in Montana. Like Montana, the state of Washington is developing a state-wide water data base system in cooperation with the USGS. Close cooperation between the States of Montana and Washington may be desirable in evolving the Montana system.

d) Data to be excluded from the Montana system - Bibliographic data, and data which are currently available from other computerized data systems will be excluded. Existing computerized data banks may be interfaced with the Montana system. Figure 1 illustrates the types of data bases that may be interfaced with the Montana system.

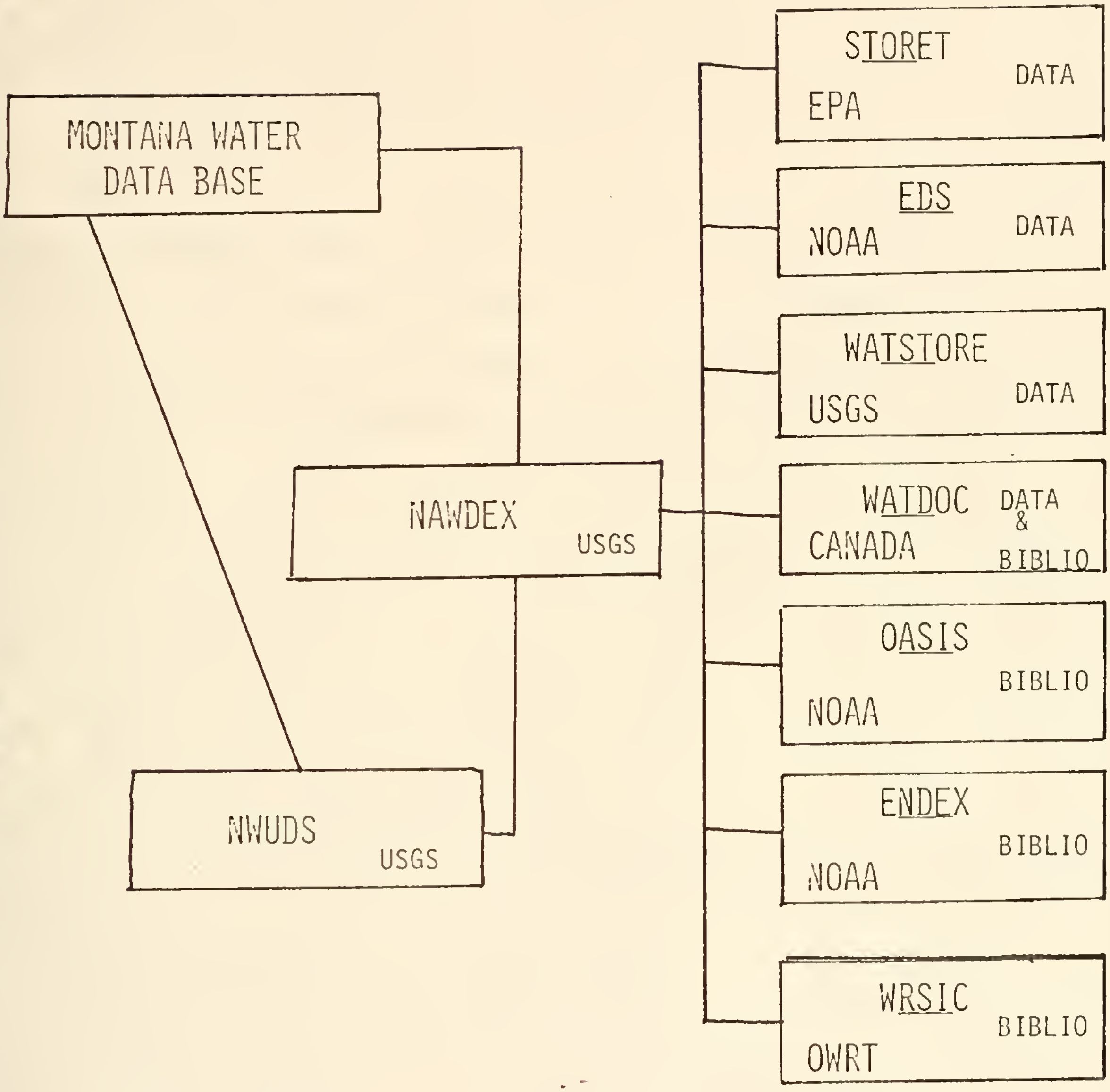
Task 4

The steering committee must determine what types of hardware are needed to operate the Montana Water Data Base system most efficiently. The IDMS data management system, installed in the Department of Administration, is capable of handling and managing the Montana system.

The types of computer hardware which should be needed to support the Montana system are listed below:

Central Processing Unit. The central processing unit (CPU) is the main frame computer which handles major data manipulation functions. It receives input from terminals, performs calculations, reorganizes information, and sends

FIGURE 1. INTERACTION OF MONTANA WATER DATA BASE WITH OTHER DATA SOURCES.



ACRONYM	NAME	AGENCY
EDS	Environmental Data Storage	National Oceanographic and Atmospheric Agency
ENDEX	Environmental Data Exchange	National Oceanographic and Atmospheric Agency
NAWDEX	National Water Data Exchange	U.S. Geologic Survey
NWUDS	National Water Use Data System	U.S. Geologic Survey
OASIS	Oceanographic Atmospheric Science Information System	National Oceanographic and Atmospheric Agency
STORET	Storage and Retrieval System	U.S. Environmental Protection Agency
WATDOC	Water Documentation	Environmental Canada
WATSTORE	Water Storage	U.S. Geologic Survey
WRSIC	Water Research Science Information Center	Office Water Research Technology

data to output devices or storage. The State of Montana already possesses a computer with the capability of handling the Montana system in conjunction with its other workloads. This main frame central processing unit (two IBM 370/158 tied by an MVS interactive mode, 1979) has about ½ its capacity in use.

Magnetic Disk. A magnetic disk is needed to rapidly store and retrieve data. This hardware is already available in the Montana system.

Data Entry/Retrieve Terminals (CRT). The terminals are designed to transmit, enter, or retrieve data. The terminals must be linked to the data base management system at the CPU. At remote sites (away from CPU) some form of data entry capability should exist. Such terminals are now a part of the hardware in the Montana system. To facilitate implementation of the MWDB system, additional terminals may be needed. Terminals will be located in the DNRC, DHES, DFWP, WRRC, and BGM and possibility in the Department of State Lands and other agencies desiring water data.

Graphic display units (optional, desirable). A variety of plotters and other types of display units, now available on the current marketplace would be extremely helpful in displaying water data. The mainframe CPU in Helena is replacing the slower plotter in its system. To facilitate the utility of the NWDB system, a unit such as Techtronix 4662 interactive digital, a Hewlitt Packard 2631G high speed graphic printout, or Cal Comp 1012 desk top plotter, may be required at the major cooperating agencies. Some of this equipment is available at these institutions, but additional units may be required at a later date.

Remote terminals. A network of remote terminals would provide inproved accessability and speed the flow of information to users in areas away from Helena. Eventually, each of the water rights field offices should have access to a computer terminal for expediting the processing of water rights applications and for field investigations.

Microcomputer. (Optional, desirable). A minicomputer is eventually planned

for the DNRC. This is felt to be a desirable option since the DNRC will receive the brunt of the requests for information from the MWDB system. A minicomputer would serve several functions such as designing and verifying the functionality of software without encumbering the mainframe computer, training users on the capabilities and mechanics of the overall MWDB system - again without involving the higher costs of operating the central processing unit by inexperienced operations and for solving water problems. Many of the routine simplistic requests for data may be handled by a minicomputer without involving the mainframe, yet retaining monitoring information on requests which will be fed and stored later on the main system.

The approach for designing and implementing the MWDB system has been to use existing hardware if possible rather than purchasing new equipment. The items listed above are desirable for operating an optimum system rather than a minimal system. The state has excellent hardware facilities, yet the priorities for expansion and growth of the MWDB system has to be still determined. Figure 2 shows the optimum locations for the hardware needed for the MWDB system.

Task 5

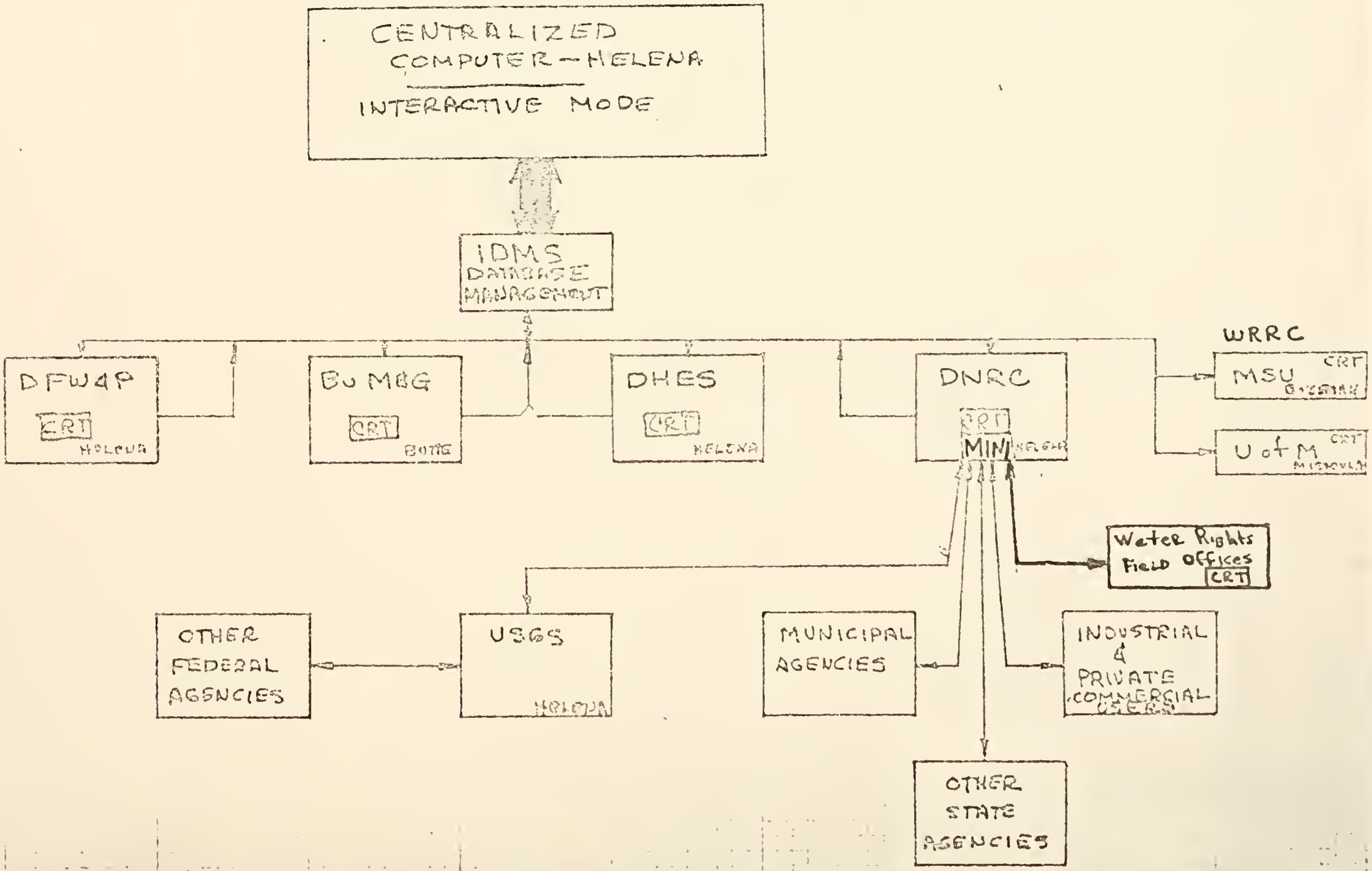
The computer analysts with assistance from the specialists must develop software so that the data can be presented in a usable format. Six conventional types of software functions will be required for the Montana system: data editing, data updating, data retrieval, conversion, reporting and interactive queries. Each software function is elaborated below. Additionally, the IDMS data base management system which will also be employed is discussed(figure 3).

1) Conversion software. Much of the existing data are in manually retrievable format and must be converted into computer compatible format. Software programs will be written to summarize and convert such data.

2) Edit software. Although a lot of existing data are already in computer format, the format may not meet the standards required by the MWDB systems. Further, data available in card format may contain coding or keypunch

FIGURE 2

MONTANA WATER DATABASE – INFORMATION FLOW PATH



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errors. For these reasons, the edit software will be required to validate input data.

3) Update software. Once the data is validated, the update software must perform the following tasks:

* Add new data to the data base
* Print a control record report to provide information on how many data were rejected.
* Maintain and keep current the data which already exists in the data base.
* Serve as a final check on the integrity of the data base by insuring that non-valid transactions are not processed. (i.e. don't permit data to be entered that is already there).
* Print a control report on how many transactions were accepted/rejected. (Totals will insure that edit/update programs are linked and working properly).

4) Data retrieval. Retrieval software has to be developed in order to retrieve data, to create computer processable files and for reports.

5) Interactive queries. Most users of MWDB system will need small amounts of information on a timely basis. A software package with instant retrieval capabilities will be required. This will allow non-computer oriented users to assess and retrieve data from MWDB via English-like commands.

6) Report programs. Summaries of data are frequently required for planning and management needs. Software will need to be developed to generate "standard" summary reports which will include:

* yearly, monthly, weekly planning reports, and
* statistical summary, trend and forecasting reports.

7) Database management. The IDMS system will be used to control:

*Interactive data retrieval via an English-like command language,
* Changing requirements in structure and data being stored, and

- The complex relationships among data elements and/or groups of data elements.

IDMS is an excellent system requiring a median level of expertise for support. It has good privacy and security control, good data base recovery routines, a central access monitor program, and integrated data dictionary, and it follows codasyl specifications for networks.

Task 6.

To properly develop and implement the data base, and appropriate software, the data must be managed properly requiring strict administrative control and sound data management.

A. Administrative Control

The administrative support needed to effectively design, construct and maintain the data base include the establishment and enforcement of standards and access control and education in use and maintenance of the system. The level of administration will vary with the location of system elements and to the degree which the system is implemented during the two phases of the project.

Standards will be established by the steering committee with input from the users, computer analysts and suppliers of data.

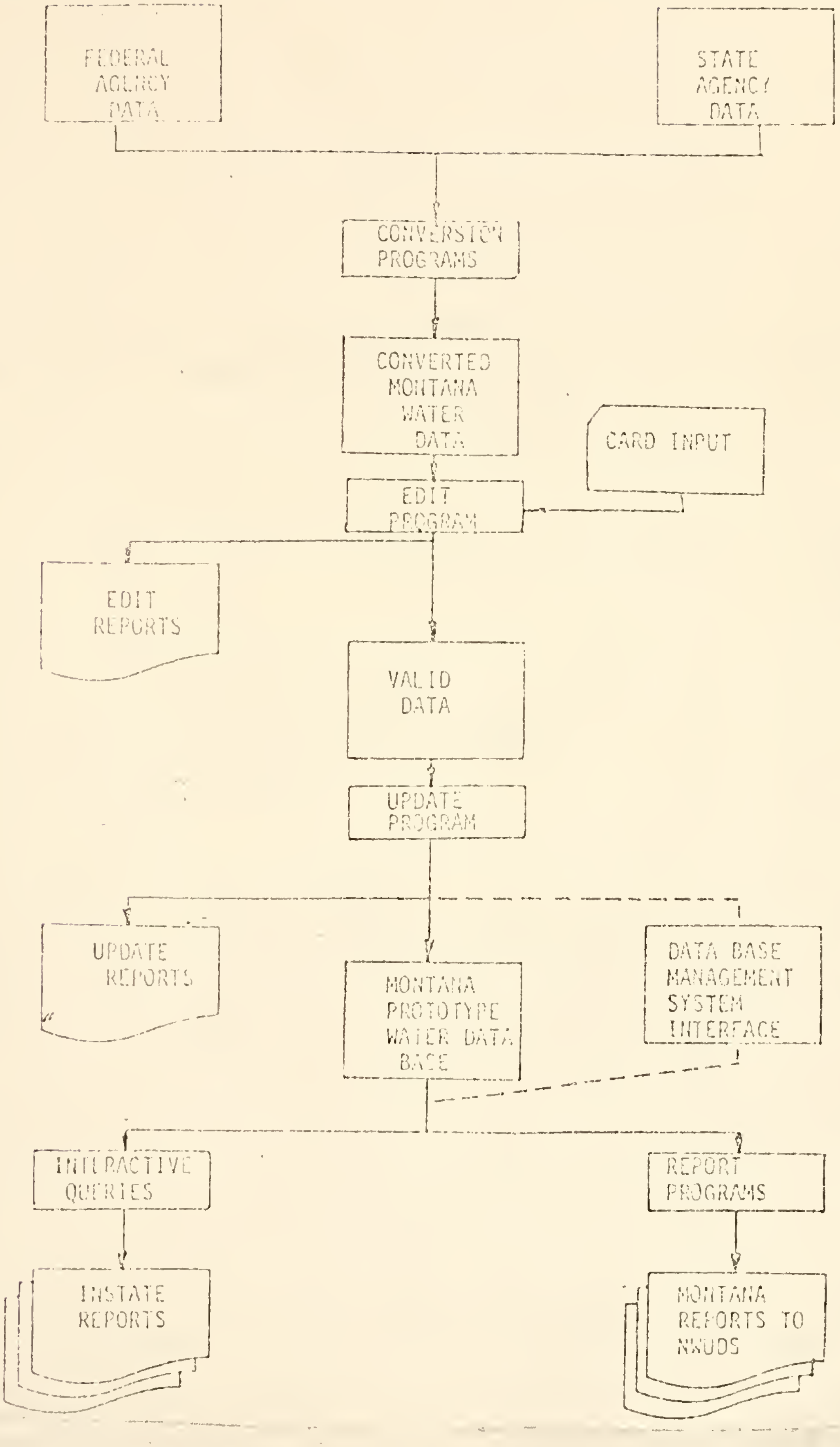
The system must be guarded against access for update by unauthorized persons to prevent willful and/or inadvertent damage or destruction to the data base. Privacy restrictions may limit the data retrieval and will limit the updating functions to those specifically authorized. This can easily be accomplished by designing the software for portions or all of the data base.

Privacy and security functions depend upon the types of data. The intent is to make as much data directly available to the public and private agencies as possible without jeopardizing the particular data base.

B. Data Management

The water data to be stored in the data base must be periodically

FIGURE 3. SOFTWARE CONFIGURATION FOR PROTOTYPE MONTANA WATER DATA BASE



gathered from the various sources and transferred to the MWDB system at the DNRC (or other designated site for the particular section of the MWDB). The data will have to be prepared for input to the software which permits and performs editing and updating. The data compilation task needs a number of administrative functions to coordinate the entire data collection process. Data can and will be supplied from cooperating state, federal, and private agencies. The Program Manager and George Cawlfield at DNRC must schedule the data compilation, insure that the work gets done, keep track of the data, and work with the specialist and computer analyst to make sure that the data is properly supplied into the data-maintenance software.

The data in the MWDB system must be periodically updated and verified or validated.

Data maintenance functions include:

(a) defining the procedures for updating

(b) defining and enforcing the schedule for updating

(c) executing the update software

(d) verifying the update

(e) reporting the results of the update

The primary purpose of the Montana Water Data Base system is to serve as the storehouse of water data that can be easily retrieved. It is anticipated that a substantial number of requests for data will be processed every year, and provision must be made to respond to all requests. The computer analysts must be available full time to answer the requests in a timely and technically correct manner. They will fulfill the requests and maintain a log (in a book or within the computer) of the requestors, the requesting information, and the action taken. These persons will also be responsible for forwarding the aggregated data to the National Water-Use Data System on an annual basis including verification of its accuracy.

Task 7

The capabilities of the MWDB system must be documented periodically. There is little question that the initial designs and implementation of the MWDB system will not be fully sufficient. Modifications for capabilities not forseen or developed will more than likely occur. Therefore, during the life span of the MWDB system, performance of the MWDB system will be calculated in view of the requests made. These evaluations will point the direction and priorities for future development of the MWDB system. The system will also have to be monitored for performance so that it may be reorganized or redefined if necessary.

Task 8

There will be several kinds of training for users of the Montana system. This will include initial training for first-time users, refresher training and training when new capabilities are placed into operation. The system will be designed so that any water manager or planner with minimal training can retrieve specific information for their use.

Task 9

The last task is to attempt to forecast and plan the performance of future tasks which are needed to make the MWDB system an extremely efficient tool for water planners and managers. Changing requirements will necessitate modifications to the MWDB system. Therefore, the system is considered dynamic in that periodic review, evaluation, and revision will be conducted by the program manager, and water managers within the various agencies and annual review by the steering committee.

IV. Projected Accomplishments

Upon completion of Phase I, the steering committee and program manager should know reasonably well whether this computerized water data base system satisfies the needs of professional in water resource management and research. Most of the data needed for the system will be known as well as preliminary ideas on the procedures for collecting, compiling, storing and retrieving data.

The computerized water data base system should be completely operational upon completion of Phase II. Stated simply, any water managers and planners, desiring certain data sets, should be able to retrieve available information in a precise format and at a reasonable cost. If the information is not available they can request that data be collected by the inventory specialists, and the necessary software developed by the computer analyst so that the data can be stored and retrieved in a usable format.

V. Schedule

This is a large project that involves many people. Therefore, proper planning is necessary to insure that the tasks are clearly defined, the schedule is compatible with the magnitude of the tasks, that check points and decision nodes from both phases are appropriately spaced and that routes of information flow are explicitly described. The schedule is outlined below.

Phase I

January 1, 1980 to January 1, 1981 - the steering committee will hold meetings to begin designing the MWDB system

April 1980 - Program Manager will be hired or contracted by the steering committee

April 1, 1980 to January 1, 1981 - The steering committee and program manager will review other computerized data base management systems and determine the data needs of the involved state agencies.

January 1, 1980 to June 31, 1984 - Water rights information mandated by SB 76 will be computerized into the MWDB system

April 1, 1980 to January 1, 1981 - The program manager with assistance from the steering committee will design and implement the system on a few test cases

January 1, 1981 - The steering committee will evaluate the system and determine whether they should proceed to phase II.

Phase II

January 1, 1981 to June 30, 1982 - the design of the state-wide MWDB system will be finalized. The 1½ years are needed to improve and refine the system as more is learned about the system. Require at least 1 month from each member of steering committee.

January 1, 1981 to March 30, 1981 - Hire the necessary personnel to develop and implement the MWDB system. Program manager will be hired full-time.

April 1, to December 30, 1981 - Develop and finalize the standards and procedures for the MWDB system. However, again, the standards and procedures will be reassessed and improved as necessary

April 1, to June 30, 1981 - Acquire necessary hardware

April 1, 1981 to March 31, 1982 - Design and develop the necessary software. This will be a continual process as more data is needed and acquired.

March 1, to June 30 (each year) - The steering committee, program manager and the data users will critically evaluate the system once each year.

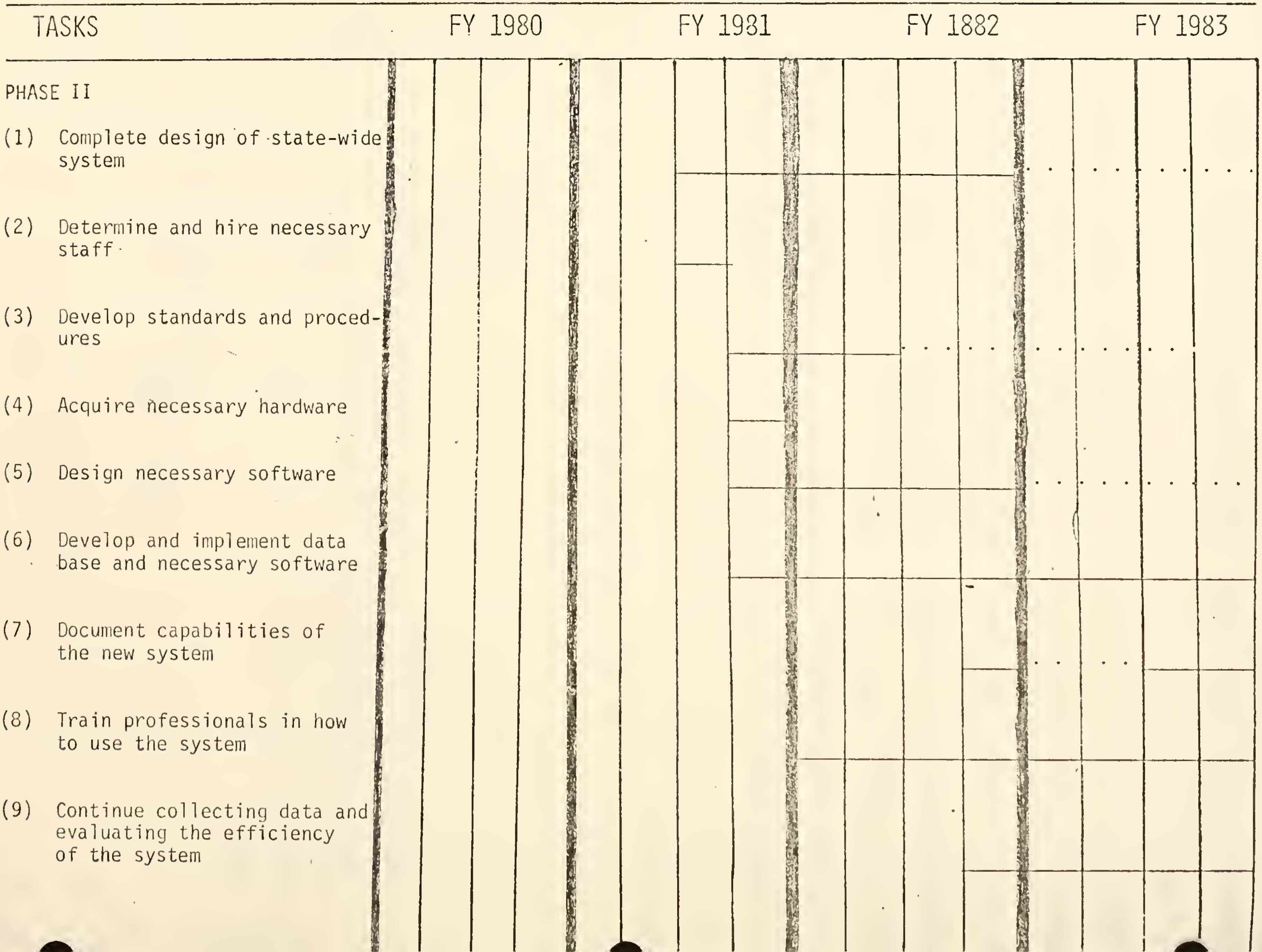
June 30, 1982 to ____________ - Users of the information will be continually trained on how to retrieve information from the MWDB system

October 1, 1983 to ____________ - Continually update the data, software and procedures to operate an efficient system.

SCHEDULE FOR IMPLEMENTING THE MONTANA WATER DATA BASE SYSTEM

TASKS	FY 1980	FY 1981	FY 1882	FY 1983
PHASE I				
(1) Organize steering committee				
a. hold 4 organizational meetings				
b. hire or contract for program manager				
c. review existing computerized data management systems in other states.				
(2) Determine what the agencies want from the system and their data needs.				
(3) Computerize water rights data mandated by SB 76				
(4) Design and implement system for a few test cases				
(5) Evaluate system				

SCHEDULE FOR IMPLEMENTING THE MONTANA WATER DATA BASE SYSTEM



NATIONAL WATER USE DATA BASE SYSTEM

MONTANA WATER USE DATA BASE

BUDGET FY 1980

	WRD Funds	Reserve Flow Funds	DNRC Matching Funds
SALARIES			
1 WRD Project Chief ¼ time	9,000	-	-
1 DNRC Program Manager (6-15) ¼ time	-	5,300	-
2 DNRC Computer Analysts (6-14) 3/4 time	-	10,000	10,000
1 DNRC Keypuncher (6-6) ½ time	-	-	3,916
1 Records Supervisor (6-13) 1/3 time	-	-	4,730
1 Records Technician (6-7) 1/4 time	-	2,126	-
Steering Committee Member	-	2,000	-
		19,426	18,646
Fringe Benefits 15%		2,914	2,796
Sub Total	9,000	22,340	21,442
Equipment			
Keypunch machine	-	-	1,000
Travel	1,000	1,300	-
Computer Costs	-	3,300	15,000
Sub Total		26,940	37,442
State Indirect Costs 11%	-	2,963	4.118
TOTAL:	10,000	29,903	41,560

BUDGET FY 81

	WRD FUNDS	RESERVE FLOW FUNDS	DNRC MATCHING FUNDS
SALARIES			
1 WRD Project Chief (full-time)	45,000	-	-
1 DNRC Program Manager (6-15) full-time	-	19,488	-
2 DNRC Computer Analyst (6-14) full-time	-	18,619	18,619
6 Adjudication Specialists (6-12) ½ time	-	-	41,241
2 Keypunchers (6-6) full-time	-	-	16,230
1 Records Supervisor (6-13) ½ time	-	-	7,095
1 Records Technician (6-7) 1/4 time	-	2,338	-
Steering Committee Members	-	2,000	-
Sub Total		42,445	83,185
Fringe Benefits 15%		6,367	12,477
		48,812	95,662
DATA COLLECTION OTHER AGENCIES			
DHES	-	3,000	-
DFWP	-	3,000	-
BMG	-	3,000	-
WRRC	-	3,000	-
Computer Costs	-	10,000	20,000
Travel			
Instate	1,000	5,000	5,000
Out-Of-State	1,000	2,000	-
	47,000	77,812	120,662
Indirect Costs 11%		8,559	13,272
TOTAL	47,000	86,371	133,934

BUDGET FY 1982

1 WRD Project Chief full-time	48,000	-	-
1 DNRC Program Manager (G-15) full-time	-	21,436	-
2 DNRC Computer Analysts (G-14) full-time	-	20,478	20,478
6 Adjudication Specialists	-	-	45,365
2 Keypunchers (G-6) full-time	-	-	17,853
1 Record Supervisor (G-13) ½ time	-	-	7,804
1 Records Technician (G-7) 1/4 time	-	2,571	-
Steering Committee	-	2,000	-
Sub Total		46,584	91,500
Fringe Benefits 15%		6,973	13,725
		53,458	115,225
DATA COLLECTION			
DHES	-	3,000	-
DFWP	-	3,000	-
BMG	-	3,000	-
WRRC	-	3,000	-
Computer Costs	-	10,000	20,000
Travel			
In-State	1,000	5,000	5,000
Out-Of-State	1,000	2,000	-
	50,000	82,000	140,225
Indirect Costs 11%			
	50,000	91,073	155,649